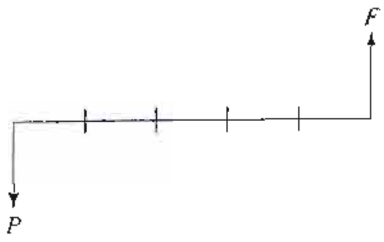
Single Payment



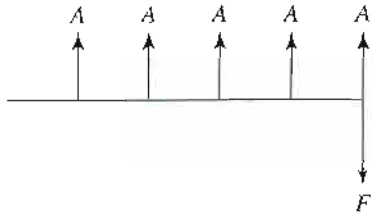
Compound Amount:

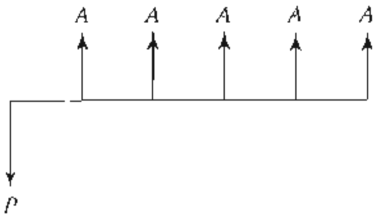
To Find F Given P	$(F/P,i,n)$	$F = P(1+i)^n$

Present Worth:

To Find P Given F	$(P/F,i,n)$	$P = F(1+i)^{-n}$

Uniform Series





Series Compound Amount:

To Find F Given A	$(F/A,i,n)$	$F = A\left[\dfrac{(1+i)^n - 1}{i}\right]$

Sinking Fund:

To Find A Given F	$(A/F,i,n)$	$A = F\left[\dfrac{i}{(1+i)^n - 1}\right]$

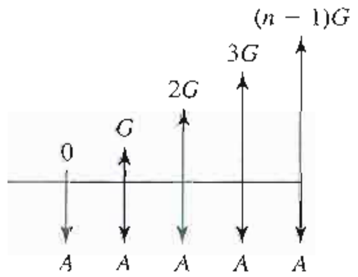
Capital Recovery:

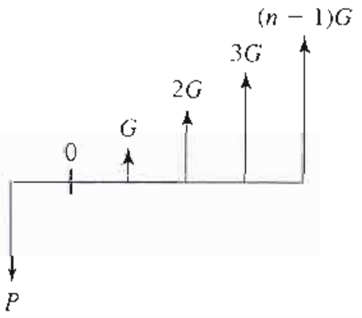
To Find A Given P	$(A/P,i,n)$	$A = P\left[\dfrac{i(1+i)^n}{(1+i)^n - 1}\right]$

Series Present Worth:

To Find P Given A	$(P/A,i,n)$	$P = A\left[\dfrac{(1+i)^n - 1}{i(1+i)^n}\right]$

Arithmetic Gradient





Arithmetic Gradient Uniform Series:

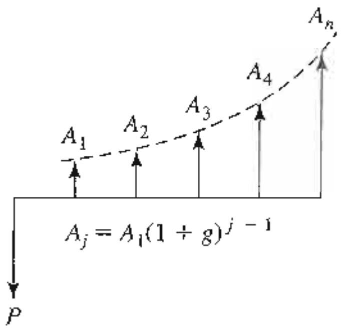
To Find A Given G	$(A/G,i,n)$	$A = G\left[\dfrac{(1+i)^n - in - 1}{i(1+i)^n - i}\right]$
	or	$A = G\left[\dfrac{1}{i} - \dfrac{n}{(1+i)^n - 1}\right]$

Arithmetic Gradient Present Worth:

To Find P Given G	$(P/G,i,n)$	$P = G\left[\dfrac{(1+i)^n - in - 1}{i^2(1+i)^n}\right]$

Geometric Gradient

Dr. Hisham Ibrahim



Geometric Series Present Worth:

To Find P Given A_1, g	$(P/A,g,i,n)$ When $i = g$	$P = A_1[n(1+i)^{-1}]$
To Find P Given A_1, g	$(P/A,g,i,n)$ When $i \neq g$	$P = A_1\left[\dfrac{1-(1+g)^n(1+i)^{-n}}{i-g}\right]$

Continuous Compounding at Nominal Rate r

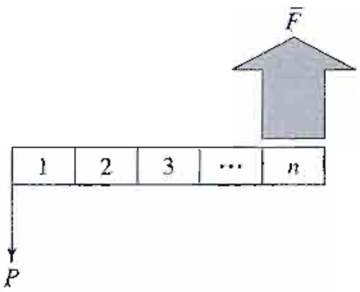
Single Payment: $F = P[e^{rn}]$ $\qquad P = F[e^{-rn}]$

Uniform Series:

$$A = F\left[\frac{e^r-1}{e^{rn}-1}\right] \qquad A = P\left[\frac{e^{rn}(e^r-1)}{e^{rn}-1}\right]$$

$$F = A\left[\frac{e^{rn}-1}{e^r-1}\right] \qquad P = A\left[\frac{e^{rn}-1}{e^{rn}(e^r-1)}\right]$$

Continuous, Uniform Cash Flow (One Period)
With Continuous Compounding at Nominal Rate r

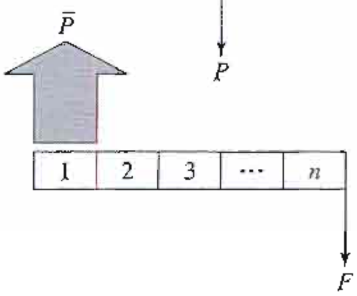


Present Worth:

To Find P
Given $\bar{F}$ $\quad [P/\bar{F},r,n]$ $\qquad P = \bar{F}\left[\dfrac{e^r-1}{re^{rn}}\right]$

Compound Amount:

To Find F
Given $\bar{P}$ $\quad [F/\bar{P},r,n]$ $\qquad F = \bar{P}\left[\dfrac{(e^r-1)(e^{rn})}{re^r}\right]$



Compound Interest

i = Interest rate per interest period*.

n = Number of interest periods.

P = A present sum of money.

F = A future sum of money. The future sum F is an amount, n interest periods from the present, that is equivalent to P with interest rate i.

A = An end-of-period cash receipt or disbursement in a uniform series continuing for n periods, the entire series equivalent to P or F at interest rate i.

G = Uniform period-by-period increase or decrease in cash receipts or disbursements; the arithmetic gradient.

g = Uniform *rate* of cash flow increase or decrease from period to period; the geometric gradient.

r = Nominal interest rate per interest period*.

m = Number of compounding subperiods per period*.

$\bar{P}, \bar{F}$ = Amount of money flowing continuously and uniformly during one given period.

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*Normally the interest period is one year, but it could be something else.